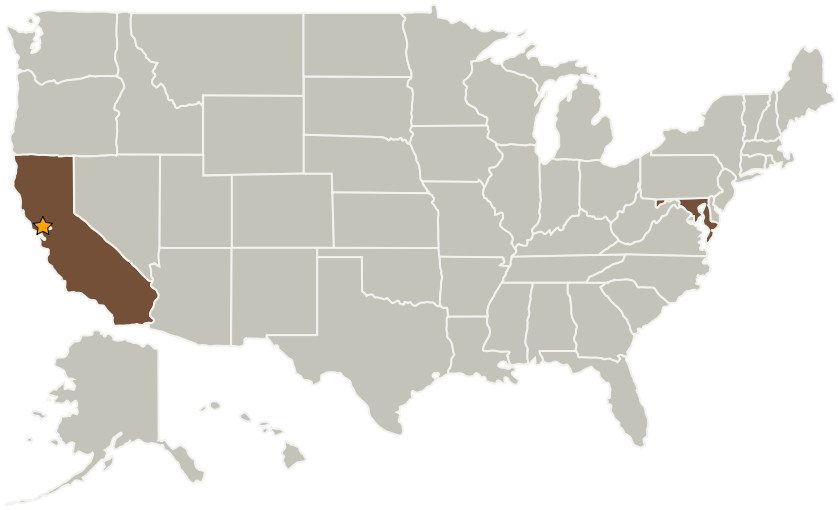
Debugging and Event Tracing for Multi-Agent Systems, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

Large-scale agent systems have become key tools in modeling and simulation tools such as NASA's Airspace Concept Evaluation System (ACES), an agent-based simulation of the National Airspace System (NAS). However, existing tools for single host debugging and analysis do not address the problem of understanding large distributed systems consisting of thousands of autonomous and independent agents. In this Phase I effort, we propose a distributed debugging and event tracing capability for multi-agent systems advancing the state of the art in development tools for distributed systems. This capability will dramatically reduce the time and effort required to understand and diagnose the behavior of complex, distributed applications. With the proposed innovation, the build and test development cycle for ACES will be dramatically reduced, enabling more functionality to be added in the form of toolboxes with less time spent in expensive system level testing. This will allow more future concepts to be evaluated with ACES in a shorter time ? meeting a critical need for customers such as the Joint Planning and Development Office (JPDO) in their development and analysis of the Next Generation Air Transportation System (NGATS) concepts using ACES.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Intelligent Automation, Inc.	Supporting Organization	Industry	Rockville, Maryland

Primary U.S. Work Locations	
California	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.2 Weather/Environment